



**INNOVATIONS IN THE  
GLOBAL FIGHT AGAINST TB:**

Field Research from  
Management Sciences for Health: 2008–2018

**Innovations in the Global Fight Against TB:  
Field Research from Management Sciences for Health (MSH)**

Peer-reviewed implementation research on TB programs  
co-authored by MSH, 2008-2018

Management Sciences for Health (MSH)

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*GeneXpert machine  
Photo by Samy Rakotoniaina*

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Dear Colleagues,

Tuberculosis (TB) continues to be a global epidemic and the world's deadliest single infectious agent. Last year, TB claimed the lives of 1.7 million people, and it affects the lives and livelihoods of millions more. While early diagnosis and treatment can cure and prevent the spread of TB, underreporting and underdiagnosis remain big issues.

The 2018 Global TB Report found that of the 10 million people who fell ill with TB in 2017, only 6.4 million were officially recorded by national reporting systems. More dangerous yet, growing resistance to first-line TB drugs threatens to undermine decades of progress and make treatment both more costly and more complex.

Still, we can end TB if governments, donors, the private sector, affected communities, and civil society actors work together to fund and execute an accelerated response to end the TB epidemic.

Responding to these challenges, on September 26, UN member states met in New York and endorsed the newly released Political Declaration on the Fight Against TB, forming the basis of future responses to end TB.

Ending TB requires bold policies, such as universal health coverage (UHC); civil society involvements; a targeted focus on vulnerable populations; the use of digital technology; and rapid innovations in TB prevention and treatment, including developing new drugs and vaccines.

We are certain that strong health care systems can end TB. Strengthening UHC and socio-economic development in line with the SDGs is remedial to end TB and bring holistic change in the health of the population.

To address the challenges of detecting TB, including among children, diagnostic tools such as GeneXpert have revolutionized TB and drug-resistant TB diagnosis. GeneXpert's speed and precision ultimately allow patients to immediately begin life-saving treatment.

As MSH has shown, innovations in TB prevention and treatment are needed throughout health systems. Better health system performance begins with inspired and inspiring leadership; sound management; and consistent, transparent governance. Advances must take into consideration central, district, and local environments; community involvement with capacity building; and accessible technical expertise to ensure correct use and sustainability.

This updated, third volume of nearly 70 peer-reviewed journal articles includes additional contributions to the research literature from MSH staff and our national (ministries of health, national TB programs, local NGOs, and universities) and international partners, as well as donors (principally the US Agency for International Development) in Africa, Asia, Latin America, and the Caribbean.



*Photo by Ghulam Qader*



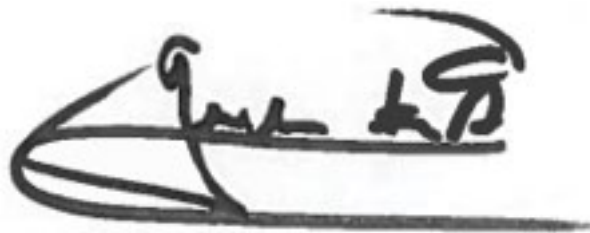
With nearly two decades spent fighting TB, MSH has the solid background in health systems strengthening needed to approach next-wave innovation, whether that be training community health workers or programming electronic information systems. The papers presented highlight particularly effective innovations for controlling this disease in the following technical areas:

- Quality DOTS implementation
- TB in fragile states and volatile environments
- Urban DOTS
- MDR-TB care and treatment
- TB epidemiology, monitoring, and evaluation
- TB contact investigation
- TB diagnostics, including GeneXpert analysis and digital x-ray
- e-TB Manager
- Public-private mix
- Quality assurance in laboratory services
- Patient-centered care for vulnerable and special populations, including those with HIV and other diseases
- TB drug management and pharmacovigilance
- TB financing
- Capacity building and surveillance systems

These articles are important contributions to the evidence base of what works in the fight against TB, including systems strengthening innovations that improve access to both established and novel TB medicines, ensuring safety and quality and promoting effective detection and case management.

We are thankful for the deep engagement of our respected colleagues: MSH staff, numerous partners, and donors, among whom USAID has been the steadiest and most generous.

Joining with you in the hope of a world free of TB,

A handwritten signature in black ink, appearing to read 'Pedro G. Suarez', with a large, sweeping flourish underneath.

Pedro G. Suarez, M.D. Senior Director, Infectious Disease Cluster  
Health Programs Group Management Sciences for Health

# Bibliography

## PEER-REVIEWED PUBLICATIONS ON TB

Authored or co-authored by MSH technical experts

January 2008–August 2018

Note: Primary author listed first; MSH contributors listed thereafter.

\*Primary author is MSH contributor. \*\*Publications without open access, thus not included in this volume.

1. Abouyannis M, Dacombe R, Dambe I, Mpunga J, Faragher B, Gausi F et al. **Drug resistance of *Mycobacterium tuberculosis* in Malawi: a cross-sectional survey.** *Bulletin of the WHO.* 2014;92:798–806. doi: <http://dx.doi.org/10.2471/BLT.13.126532>.
2. Ahmadzai H, Rashidi M, Suarez P, Ameli O, Hartman AF. **Scaling up TB DOTS in a fragile state: post-conflict Afghanistan.** *International Journal of Tuberculosis and Lung Diseases.* 2008;12(2):180–5.
3. Andre E, Isaacs C, Affolabi D, Alagna R, Brockmann D, de Jong BC, et al. **Connectivity of diagnostic technologies: improving surveillance and accelerating tuberculosis elimination.** *International Journal of Tuberculosis and Lung Diseases.* 2016;20(8):999–1003. doi: 10.5588/ijtld.16.0015.
4. Asres A, Jerene D, Deressa W. **Delays to treatment initiation is associated with tuberculosis treatment outcomes among patients on directly observed treatment short course in Southwest Ethiopia: a follow-up study.** *BMC Pulmonary Medicine.* 2018;18(1):64. doi: 10.1186/s12890-018-0628-2.
5. Asres A, Jerene D, Deressa W. **Tuberculosis treatment outcomes of six and eight month treatment regimens in districts of Southwestern Ethiopia: a comparative cross-sectional study.** *BMC Infectious Diseases.* 2016;16:653. doi: 10.1186/s12879-016-1917-0.
6. \*Collins D, Beyene D, Tedla Y, Mesfin H, Diro E. **Can patients afford the cost of treatment for multidrug-resistant tuberculosis in Ethiopia?** *International Journal of Tuberculosis and Lung Disease.* 2018 | Aug; 22: 905–11(7). DOI: <https://doi.org/10.5588/ijtld.17.0837>.
7. \*Collins D, Hafidz F, Mustikawati D. **The economic burden of tuberculosis in Indonesia.** *International Journal of Tuberculosis and Lung Disease.* 2017;(9):1041–8. doi: 10.5588/ijtld.16.0898.
8. \*\*Daniel G, Tegegnetwork H, Demissie T, Reithinger R. **Pilot assessment of supply chains for pharmaceuticals and medical commodities for malaria, tuberculosis and HIV infection in Ethiopia.** *Transactions of the Royal Society for Tropical Medicine and Hygiene.* 2012;106(1): 60–2. doi: 10.1016/j.trstmh.2011.09.008.
9. \*\*Dememew ZG, Melese M, Hiruy N, Girma B, Jerene D, Suarez P, et al. **Trends in tuberculosis case notification and treatment outcomes after interventions in 10 zones of Ethiopia.** *International Journal of Tuberculosis and Lung Disease.* 2016;20(9):1192–8. doi: 10.5588/ijtld.16.0005.
10. Falzon D, Jaramillo E, Schünemann HJ, Arentz M, Bauer M, Bayona J, et al. **WHO guidelines for the programmatic management of drug-resistant tuberculosis: 2011 update.** *European Respiratory Journal.* 2011;38(3):516–28. doi: 10.1183/09031936.00073611.
11. Falzon D, Timimi H, Kurosinski P, Migliori GB, Van Gemert W, Denkinger C, et al. **Digital health for the End TB Strategy: developing priority products and making them work.** *European Respiratory Journal.* 2016;48(1):29–45. doi: <https://doi.org/10.1183/13993003.00424-2016>.
12. Gafirita J, Umubyeyi AN, Asiimwe BB. **A first insight into the genotypic diversity of *Mycobacterium tuberculosis* from Rwanda.** *BMC Clinical Pathology.* 2012;12:20. doi: 10.1186/1472-6890-12-20.
13. \*Gashu Z, Jerene D, Ensermu M, Habte D, Melese M, Hiruy N, et al. **The yield of community-based “retrospective” tuberculosis contact investigation in a high burden setting in Ethiopia.** *PLoS One.* 2016. doi: <http://dx.doi.org/10.1371/journal.pone.0160514>.

14. Gebregergs GB, Alemneh M, Koye DN, Kassie Y, Assefa M, Ayalew W, et al. **Poor symptomatic tuberculosis screening practices in a quarter of health centers in Amhara Region, Ethiopia.** *Public Health Action.* 2014;4 Suppl 3. doi: 10.5588/pha.14.0053.
15. Gemal A, Keravec J, Menezes A, Trajman A. **Can Brazil play a more important role in global tuberculosis drug production? An assessment of current capacity and challenges.** *BMC Public Health.* 2013;13:279. doi: <http://www.biomedcentral.com/1471-2458/13/279>.
16. Habte D, Melese M, Hiruy N, Gashu Z, Jerene D, Moges F, et al. **The additional yield of GeneXpert MTB/RIF test in the diagnosis of pulmonary tuberculosis among household contacts of smear positive TB cases.** *International Journal of Infectious Diseases.* 2016;49:179-84. doi: 10.1016/j.ijid.2016.07.002.
17. Harries AD, Ford N, Jahn A, Schouten EJ, Libamba E, Chimbwandira F, et al. **Act local, think global: How the Malawi experience of scaling up antiretroviral treatment has informed global policy.** *BMC Public Health.* 2016;16(1):938. doi: 10.1186/s12889-016-3620-x.
18. \*\*Harries AD, Zachariah R, Chimzizi R, Salaniponi FM, Lawn SD. **Tuberculosis.** In: Mabey D, Gill G, Parry E, Weber MW, Whitty CJM (eds.) *Principles of medicine in Africa.* 4th ed. Cambridge: Cambridge University Press. 2013. p. 232–53. [http://www.cambridge.org/us/knowledge/isbn/item6459633/?site\\_locale=en\\_US](http://www.cambridge.org/us/knowledge/isbn/item6459633/?site_locale=en_US).
19. Harries AD, Zachariah R, Chimzizi R, Salaniponi F, Gausi F, Kanyerere H, Schouten EJ, et al. **Operational research in Malawi: making a difference with cotrimoxazole preventive therapy in patients with TB and HIV.** *BMC Public Health.* 2011;11(593). doi: 10.1186/1471-2458-11-593.
20. Hirpa S, Medhin G, Girma B, Melese M, Mekonen A, Suarez P, et al. **Determinants of multidrug-resistant tuberculosis in patients who underwent first-line treatment in Addis Ababa.** *BMC Public Health.* 2013;13(1):782. doi: <http://www.biomedcentral.com/1471-2458/13/782>.
21. Hiruy N, Melese M, Habte D, Jerene D, Gashu Z, Alem G. **Comparison in the yield of tuberculosis among contacts of multidrug-resistant and drug-sensitive tuberculosis patients in Ethiopia using GeneXpert as a primary diagnostic test.** *International Journal of Infectious Diseases.* 2018;71:4–8. doi: 10.1016/j.ijid.2018.03.011.
22. \*Jerene D, Abebe W, Taye K, Suarez PG, Feleke Y, Hallström I, Ruff A. **Tuberculosis along the continuum of HIV care in a cohort of adolescents living with HIV in Ethiopia.** *International Journal of Tuberculosis and Lung Disease.* 2017;21(1):32–7(6). doi: <https://doi.org/10.5588/ijtld.16.0105>.
23. \*\*Jerene D, Hiruy N, Jemal I, Gebrekiros W, Anteneh T, Habte D, Melese M, Suarez P, Sangiwa G. **The yield and feasibility of integrated screening for TB, diabetes and HIV in four public hospitals in Ethiopia.** *International Health.* 2017;9(2): 100–4.
24. Jerene D, Melese M, Kassie Y, Alem G, Daba SH, Hiruye N, et al. **The yield of a tuberculosis household contact investigation in two regions of Ethiopia.** *International Journal of TB and Lung Disease.* 2015;19(8):898–903. <http://dx.doi.org/10.5588/ijtld.14.0978>.
25. \*Karmaker H, Basar MA, Karim MR, Rana MM, Hossain MG, Wadood MA. **An epidemiological study of drug resistant tuberculosis cases: survey in the northern part of Bangladesh.** *Public Health Research.* 2016;6(2):52–8. doi: 10.5923/j.phr.20160602.04.
26. Kibret KT, Alemayehu WY, Belaineh GB, Muluken MA. **Determinant factors associated with occurrence of tuberculosis among adult people living with HIV after antiretroviral treatment initiation in Addis Ababa Ethiopia: a case control study.** *PLoS One.* 2013;8(5):e64488. doi: 10.1371/journal.pone.0064488.
27. \*Konduri N, Delmotte E, Rutta E. **Engagement of the private pharmaceutical sector for TB control: rhetoric or reality?** *Journal of Pharmaceutical Policy and Practice.* 2017;10:6. doi: 10.1186/s40545-016-0093-3.
28. \*Konduri N, Bastos LGV, Sawyer K, Reciolino LFA. **User experience analysis of an eHealth system for tuberculosis in resource-constrained settings: A nine-country comparison.** *International Journal of Medical Informatics.* 2017;102:118-29. doi: 10.1016/j.ijmedinf.2017.03.017.



29. \*Konduri N, Sawyer K, Nizova N. **User experience analysis of e-TB Manager, a nationwide electronic tuberculosis recording and reporting system in Ukraine.** *ERJ Open Research*. 2017;3(2). pii: 00002-2017. doi: 10.1183/23120541.00002-2017.
30. \*\*Lingaraju S, Rigouts L, Gupta A, Lee J, Umubyeyi AN, Davidow AL, et al. **Geographic differences in the contribution of ubiA mutations to high-level ethambutol resistance in *Mycobacterium tuberculosis*.** *Antimicrobial Agents and Chemotherapy*. 2016;60(7):4101–5. doi: 10.1128/AAC.03002-15.
31. \*Lukoye D, Ssengooba W, Musisi K, Kasule GW, Cobelens FG, Joloba M, et al. **Variation and risk factors of drug resistant tuberculosis in sub-Saharan Africa: a systematic review and meta-analysis.** *BMC Public Health*. 2015;15(1):291. doi: 10.1186/s12889-015-1614-8.
32. Lunte K, Cordier-Lassalle T, Keravec J. **Reducing the price of treatment for multidrug-resistant tuberculosis through the Global Drug Facility.** *Bulletin of the WHO*. 2015;93:279–82. doi: <http://dx.doi.org/10.2471/BLT.14.145920>.
33. Malhotra S, Ursu I, Ghoneim R, Paredes Jodrey P, Brown MS, Barr-DiChiara M. **From availability to uptake: planning for the introduction of new, child-friendly anti-tuberculosis formulations.** *International Journal of Tuberculosis and Lung Disease*. 2015;19(12):Suppl 1:32–S38. doi: <http://dx.doi.org/10.5588/ijtld.15.0482>.
34. Mauch V, Bonsu F, Gyapong M, Awini E, Suarez P, Marcelino B, et al. **Free tuberculosis diagnosis and treatment are not enough: Patient cost evidence from three continents.** *International Journal of Tuberculosis and Lung Disease*. 2013;17(3):381–7. doi: <http://dx.doi.org/10.5588/ijtld.12.0368>.
35. \*\*Mauch V, Melgen R, Marcelino B, Acosta I, Klinkenberg E, Suarez P. **Tuberculosis patients in the Dominican Republic face severe direct and indirect costs and need social protection.** *Revista Panamericana de Salud Pública*. 2013;33:332–9.
36. \*Mekonnen, F. **Multidrug resistant tuberculosis: prevalence and risk factors in districts of Metema and West Armachiho, Northwest Ethiopia.** *BMC Infectious Diseases*. 2015;15:461. doi: 10.1186/s12879-015-1202-7.
37. Melese M, Habte D, Girma B, Kassie Y, Negash S, Melkeneh K, Daba S, Negussie G, Haile Y, Jerene D, Hiruy N, Gashu Z, Timmons B, Suarez P. **Use of indicators of standards of care to improve tuberculosis program management in Ethiopia.** *Journal of Clinical Tuberculosis and Other Mycobacterial Diseases*. 2018;10:17–23. doi: <https://doi.org/10.1016/j.jctube.2017.12.001>.
38. \*Melese M, Jerene D, Alem G, Seid J, Belachew F, Kassie Y, et al. **Decentralization of acid fast bacilli (AFB) external quality assurance using blind rechecking for sputum smear microscopy in Ethiopia.** *PLoS One*. 2016;11(3):e0151366. doi: 10.1371/journal.pone.0151366.
39. Mitnick CD, Keravec J. **Planning for the invisible: projecting resources needed to identify and treat all patients with MDR-TB.** *International Journal of Tuberculosis and Lung Disease*. 2013;17(4):427-8. doi: 10.5588/ijtld.13.0110.
40. Molla Y, Jerene D, Jemal I, Nigussie G, Kebede T, Kassie Y, Hiruy N, Aschale G, Habte D, Gashu Z, Haile Y, Melese M, Suarez P. **The experience of scaling up a decentralized, ambulatory model of care for management of multidrug-resistant tuberculosis in two regions of Ethiopia.** *Journal of Clinical Tuberculosis and Other Mycobacterial Diseases*. 2017;7:28-33. doi: 10.1016/j.jctube.2017.03.001.
41. \*Nabukenya-Mudiope MG, Kawuma HJ, Brouwer M, Mudiope P, Vassall A. **Tuberculosis retreatment “others” in comparison with classical retreatment cases: a retrospective cohort review.** *BMC Public Health*. 2015;15:840. doi: 10.1186/s12889-015-2195-2.
42. Namiiro S, Wobudeya E, Colebunders R, Worodria W. **Molecular tests expedite the diagnosis of multidrug-resistant tuberculosis in childhood [letter].** *International Journal of Tuberculosis and Lung Disease*. 2018;22:349–50(2). doi: <https://doi.org/10.5588/ijtld.17.0507>.

43. Ngabonziza JC, Ssengooba W, Mutua F, Torrea G, Dushime A, Gasana M, et al. **Diagnostic performance of smear microscopy and incremental yield of Xpert in detection of pulmonary tuberculosis in Rwanda.** *BMC Infectious Diseases*. 2016;16(1):660. doi: 10.1186/s12879-016-2009-x.
44. Ngadaya ES, Mfinanga GS, Wandwalo ER, Morkve O. **Delay in tuberculosis case detection in Pwani Region, Tanzania: a cross-sectional study.** *BMC Health Services Research*. 2009;9:196. doi: 10.1186/1472-6963-9-196.
45. Ngadaya ES, Mfinanga GS, Wandwalo ER, Morkve O. **Pulmonary tuberculosis among women with cough attending clinics for family planning and maternal and child health in Dar Es Salaam, Tanzania.** *BMC Public Health*. 2009;9:278. doi: 10.1186/1471-2458-9-278.
46. \*Nyaruhirira AU, Toussaint M, Nemser B, Vandebriel G, Gasana M, Ben Amor Y. **Performance of LED fluorescence microscopy for the detection of tuberculosis in Rwanda using Zeiss Primo Star.** *Pan African Medical Journal*. 2015;21:198. doi: 10.11604/pamj.2015.21.198.5776.
47. Ogbudebe CL, Adepoju V, Ekerete-Udofia C, Abu E, Egesemba G, Chukwueme N, Gidado, M. **Childhood tuberculosis in Nigeria: disease presentation and treatment outcomes.** *Health Services Insights*. 2018;11:1-7. doi: <https://doi.org/10.1177/1178632918757490>.
48. Olakunle, OS, Oladimeji O, Olalekan AW, Olugbenga-Bello A, Akinleye C, Oluwatoyin OA. **Knowledge of tuberculosis management using directly observed treatment short course therapy among final year medical students in South Western Nigeria.** *Pan African Medical Journal*. 2014;18:32. doi: 10.11604/pamj.2014.18.32.3553.
49. \*Qader G, Hamim A, Sayedi M, Rashidi M, Manzoor L, Seddiq MK, et al. **Addressing tuberculosis control in fragile states: urban DOTS experience in Kabul, Afghanistan, 2009–2015.** *PLoS One*. 2017;12(5):e0178053.
50. \*Rutta E, Delmotte E, Mwakisu S, Konduri N, Kakanda K, Valimba R. **Understanding private retail drug outlet dispenser knowledge and practices in tuberculosis care in Tanzania.** *International Journal of Tuberculosis and Lung Disease*. 2014;18(9):1108–13. doi: <http://dx.doi.org/10.5588/ijtld.14.0020>.
51. \*Sagwa E, Mantel-Teeuwisse AK, Ruswa N, Musasa JP, Pal S, Dhliwayo P, et al. **The burden of adverse events during treatment of drug-resistant tuberculosis in Namibia.** *Southern Medical Review*. 2012;5(1):6–13.
52. Saito S, Howard AA, Reid MJ, Elul B, Scardigli A, Verkuijl S, et al. **TB diagnostic capacity in sub-Saharan African HIV care settings.** *Journal of Acquired Immune Deficiency Syndromes*. 2012;61(2):216-20. doi: 10.1097/QAI.0b013e3182638ec7.
53. Sileshi B, Deyessa N, Girma B, Melese M, Suarez P. **Predictors of mortality among TB-HIV co-infected patients being treated for tuberculosis in northwest Ethiopia: a retrospective cohort study.** *BMC Infectious Diseases*. 2013;13:297. doi: 10.1186/1471-2334-13-297.
54. \*Simon GG. **Impacts of neglected tropical disease on incidence and progression of HIV/AIDS, tuberculosis, and malaria: scientific links.** *International Journal of Infectious Diseases*. 2016;42:54–7. doi: 10.1016/j.ijid.2015.11.006.
55. \*\*Tadeg H, Berhane Y. **Substandard and counterfeit antimicrobials: recent trends and implications to key public health interventions in developing countries.** *East African Journal of Public Health*. 2012;9(2):85–9.
56. \*Tadesse Y, Gebre N, Daba S, Gashu Z, Habte D, Hiruy N, et al. **Uptake of isoniazid preventive therapy among under-five children: TB contact investigation as an entry point.** *PLoS One*. 2016;11(5):e0155525. doi: 10.1371/journal.pone.0155525.
57. Telisinghe L, Charalambous S, Topp SM, Herce ME, Hoffmann CJ, Barron P, et al. **HIV and tuberculosis in prisons in sub-Saharan Africa.** *The Lancet*. 2016;388:17–23. doi: 10.1016/S0140-6736(16)30578-5.
58. Tessema B, Moges F, Habte D, Hiruy N, Yismaw S, Melkieneh K, Kassie Y, Girma B, Melese M, Suarez P. **Vitamin D deficiency among smear positive pulmonary tuberculosis patients and their tuberculosis negative household contacts in Northwest Ethiopia: a case-control study.** *Annals of Clinical Microbiology and Antimicrobials*. 2017;16(1):36. doi: 10.1186/s12941-017-0211-3.

59. Titiyos A, Jerene D, Enqueselasia F. **The yield of screening symptomatic contacts of multidrug-resistant tuberculosis cases at a tertiary hospital in Addis Ababa, Ethiopia.** *BMC Research Notes*. 2015;8:501. doi: 10.1186/s13104-015-1442-z.
60. \*Umubyeyi AN, Bonsu F, Chimzizi R, Jemal S, Melese M, Rutttoh E, et al. **The role of technical assistance in expanding access to Xpert MTB/RIF: experience in sub-Saharan Africa.** *Public Health Action*. 2016;6(1):32–4. doi: <http://dx.doi.org/10.5588/pha.15.0069>.
61. van den Hof S, Collins D, Hafidz F, Beyene D, Tursynbayeva A, Tiemersma A. **The socioeconomic impact of multidrug resistant tuberculosis on patients: results from Ethiopia, Indonesia and Kazakhstan.** *BMC Infectious Diseases*. 2016;16(1):470. doi: 10.1186/s12879-016-1802-x.
62. van Hoom R, Jaramillo E, Collins D, Gebhard A, van den Hof S. **The effects of psycho-emotional and socio-economic support for tuberculosis patients on treatment adherence and treatment outcomes: a systematic review and meta-analysis.** *PLoS One*. 2016;11(4):e0154095. doi: <http://doi.org/10.1371/journal.pone.0154095>.
63. Vianzon R, Garfin AMC, Lagos A, Belen R. **The tuberculosis profile of the Philippines, 2003-2011: advancing DOTS and beyond.** *Western Pacific Surveillance and Response Journal*. 2013;4(2):11–16. doi: 10.5365/wpsar.2012.3.4.022.
64. Wells WA, Konduri N, Chen C, Lee D, Ignatius HR, Gardiner E, et al. **Implications of the current TB treatment landscape for future regimen change.** *International Journal of Tuberculosis and Lung Disease*. 2011;15(6):746–53. doi: 10.5588/ijtld.10.0094.
65. Wells WA, Konduri N, Lee D, Ignatius HR, Gardiner E, et al. **TB regimen change in the high burden countries.** *International Journal of Tuberculosis and Lung Disease*. 2010;14(12):1538–47. doi: <http://www.ingentaconnect.com/content/iuatld/ijtld/2010/00000014/00000012/art00010>.
66. Westerlund E, Jerene D, Mulissa Z, Hallström I, Lindtjörn B. **Pre-ART retention in care and prevalence of tuberculosis among HIV-infected children at a district hospital in southern Ethiopia.** *BMC Pediatrics*. 2014;14:250. doi: <http://www.biomedcentral.com/1471-2431/14/250>.
67. Wobudeya E, Lukoye D, Lubega IR, Mugabe F, Sekadde M, Musoke P. **Epidemiology of tuberculosis in children in Kampala district, Uganda, 2009–2010: a retrospective cross-sectional study.** *BMC Public Health*. 2015;15:967. doi: 10.1186/s12889-015-2312-2.
68. Wobudeya E, Sekadde-Kasirye M, Kimuli D, Mugabe F, Lukoye D. **Trend and outcome of notified children with tuberculosis during 2011-2015 in Kampala, Uganda.** *BMC Public Health*. 2017;17: 963. doi: <https://doi.org/10.1186/s12889-017-4988-y>.

# Peer-Reviewed Publications on Tuberculosis

## AUTHORED OR CO-AUTHORED BY MSH TECHNICAL EXPERTS

(Listed by year of publication)

Note: Primary author listed first; MSH contributors listed thereafter.

\*Primary MSH contributor. \*\*Publications without open access, thus not included in this volume.

### 2018

1. Asres A, Jerene D, Deressa W. **Delays to treatment initiation is associated with tuberculosis treatment outcomes among patients on directly observed treatment short course in Southwest Ethiopia: a follow-up study.** *BMC Pulmonary Medicine.* 2018;18(1):64. doi: 10.1186/s12890-018-0628-2.
2. \*Collins D, Beyene D, Tedla Y, Mesfin H, Diro E. **Can patients afford the cost of treatment for multidrug-resistant tuberculosis in Ethiopia?** *International Journal of Tuberculosis and Lung Disease.* 2018 | Aug; 22: 905–11(7). DOI: <https://doi.org/10.5588/ijtld.17.0837>.
3. Hiruy N, Melese M, Habte D, Jerene D, Gashu Z, Alem G. **Comparison in the yield of tuberculosis among contacts of multidrug-resistant and drug-sensitive tuberculosis patients in Ethiopia using GeneXpert as a primary diagnostic test.** *International Journal of Infectious Diseases.* 2018;71:4–8. doi: 10.1016/j.ijid.2018.03.011.
4. Melese M, Habte D, Girma B, Kassie Y, Negash S, Melkeneh K, Daba S, Negussie G, Haile Y, Jerene D, Hiruy N, Gashu Z, Timmons B, Suarez P. **Use of indicators of standards of care to improve tuberculosis program management in Ethiopia.** *Journal of Clinical Tuberculosis and Other Mycobacterial Diseases.* 2018;10:17–23. doi: <https://doi.org/10.1016/j.jctube.2017.12.001>.
5. Namiiro S, Wobudeya E, Colebunders R, Worodria W. **Molecular tests expedite the diagnosis of multidrug-resistant tuberculosis in childhood [letter].** *International Journal of Tuberculosis and Lung Disease.* 2018;22:349–50(2). doi: <https://doi.org/10.5588/ijtld.17.0507>.
6. Ogbudebe CL, Adepoju V, Ekerete-Udofia C, Abu E, Egesemba G, Chukwueme N, Gidado, M. **Childhood tuberculosis in Nigeria: disease presentation and treatment outcomes.** *Health Services Insights.* 2018;11:1–7. doi: <https://doi.org/10.1177/1178632918757490>.

### 2017

7. \*Collins D, Hafidz F, Mustikawati D. **The economic burden of tuberculosis in Indonesia.** *International Journal of Tuberculosis and Lung Disease.* 2017;(9):1041–8. doi: 10.5588/ijtld.16.0898.
8. \*Jerene D, Abebe W, Taye K, Suarez PG, Feleke Y, Hallström I, Ruff A. **Tuberculosis along the continuum of HIV care in a cohort of adolescents living with HIV in Ethiopia.** *International Journal of Tuberculosis and Lung Disease.* 2017;21(1):32–7(6). doi: <https://doi.org/10.5588/ijtld.16.0105>.
9. \*\*Jerene D, Hiruy N, Jemal I, Gebrekiros W, Anteneh T, Habte D, Melese M, Suarez P, Sangiwa G. **The yield and feasibility of integrated screening for TB, diabetes and HIV in four public hospitals in Ethiopia.** *International Health.* 2017;9(2): 100–4.
10. \*Konduri N, Delmotte E, Rutta E. **Engagement of the private pharmaceutical sector for TB control: rhetoric or reality?** *Journal of Pharmaceutical Policy and Practice.* 2017;10:6. doi: 10.1186/s40545-016-0093-3.
11. \*Konduri N, Bastos LGV, Sawyer K, Reziolino LFA. **User experience analysis of an eHealth system for tuberculosis in resource-constrained settings: A nine-country comparison.** *International Journal of Medical Informatics.* 2017;102:118–29. doi: 10.1016/j.ijmedinf.2017.03.017.

12. \*Konduri N, Sawyer K, Nizova N. **User experience analysis of e-TB Manager, a nationwide electronic tuberculosis recording and reporting system in Ukraine.** *ERJ Open Research.* 2017;3(2). pii: 00002-2017. doi: 10.1183/23120541.00002-2017.
13. Molla Y, Jerene D, Jemal I, Nigussie G, Kebede T, Kassie Y, Hiruy N, Aschale G, Habte D, Gashu Z, Haile Y, Melese M, Suarez P. **The experience of scaling up a decentralized, ambulatory model of care for management of multidrug-resistant tuberculosis in two regions of Ethiopia.** *Journal of Clinical Tuberculosis and Other Mycobacterial Diseases.* 2017;7:28-33. doi: 10.1016/j.jctube.2017.03.001.
14. Tessema B, Moges F, Habte D, Hiruy N, Yismaw S, Melkieneh K, Kassie Y, Girma B, Melese M, Suarez P. **Vitamin D deficiency among smear positive pulmonary tuberculosis patients and their tuberculosis negative household contacts in Northwest Ethiopia: a case-control study.** *Annals of Clinical Microbiology and Antimicrobials.* 2017;16(1):36. doi: 10.1186/s12941-017-0211-3.
15. Wobudeya E, Sekadde-Kasirye M, Kimuli D, Mugabe F, Lukoye D. **Trend and outcome of notified children with tuberculosis during 2011-2015 in Kampala, Uganda.** *BMC Public Health.* 2017;17: 963. doi: <https://doi.org/10.1186/s12889-017-4988-y>.

## 2016

16. Andre E, Isaacs C, Affolabi D, Alagna R, Brockmann D, de Jong BC, et al. **Connectivity of diagnostic technologies: improving surveillance and accelerating tuberculosis elimination.** *International Journal of Tuberculosis and Lung Diseases.* 2016;20(8):999–1003. doi: 10.5588/ijtld.16.0015.
17. Asres A, Jerene D, Deressa W. **Tuberculosis treatment outcomes of six and eight month treatment regimens in districts of Southwestern Ethiopia: a comparative cross-sectional study.** *BMC Infectious Diseases.* 2016;16: 653. doi: 10.1186/s12879-016-1917-0.
18. \*Dememew ZG, Melese M, Hiruy N, Girma B, Jerene D, Suarez P, et al. **Trends in tuberculosis case notification and treatment outcomes after interventions in 10 zones of Ethiopia.** *International Journal of Tuberculosis and Lung Disease.* 2016;20(9):1192-8. doi: 10.5588/ijtld.16.0005.
19. Falzon D, Timimi H, Kurosinski P, Migliori GB, Van Gemert W, Denkinger C, et al. **Digital health for the End TB Strategy: developing priority products and making them work.** *European Respiratory Journal.* 2016;48(1):29–45. doi: <https://doi.org/10.1183/13993003.00424-2016>.
20. \*Gashu Z, Jerene D, Ensermu M, Habte D, Melese M, Hiruy N, et al. **The yield of community-based “retrospective” tuberculosis contact investigation in a high burden setting in Ethiopia.** *PLoS One.* 2016. doi: <http://dx.doi.org/10.1371/journal.pone.0160514>.
21. Habte D, Melese M, Hiruy N, Gashu Z, Jerene D, Moges F, et al. **The additional yield of GeneXpert MTB/RIF test in the diagnosis of pulmonary tuberculosis among household contacts of smear positive TB cases.** *International Journal of Infectious Diseases.* 2016;49:179-84. doi: 10.1016/j.ijid.2016.07.002.
22. Harries AD, Ford N, Jahn A, Schouten EJ, Libamba E, Chimbwandira F, et al. **Act local, think global: How the Malawi experience of scaling up antiretroviral treatment has informed global policy.** *BMC Public Health.* 2016;16(1):938. doi: 10.1186/s12889-016-3620-x.
23. \*Karmaker H, Basar MA, Karim MR, Rana MM, Hossain MG, Wadood MA. **An epidemiological study of drug resistant tuberculosis cases: survey in the northern part of Bangladesh.** *Public Health Research* 2016;6(2):52–8. doi: 10.5923/j.phr.20160602.04.
24. \*\*Lingaraju S, Rigouts L, Gupta A, Lee J, Umubyeyi AN, Davidow AL, et al. **Geographic differences in the contribution of ubiA mutations to high-level ethambutol resistance in Mycobacterium tuberculosis.** *Antimicrobial Agents and Chemotherapy.* 2016;60(7):4101–5. doi: 10.1128/AAC.03002-15.
25. \*Melese M, Jerene D, Alem G, Seid J, Belachew F, Kassie Y, et al. **Decentralization of acid fast bacilli (AFB) external quality assurance using blind rechecking for sputum smear microscopy in Ethiopia.** *PLoS One.* 2016;11(3):e0151366. doi: 10.1371/journal.pone.0151366.



26. Ngabonziza JC, Ssengooba W, Mutua F, Torrea G, Dushime A, Gasana M, et al. **Diagnostic performance of smear microscopy and incremental yield of Xpert in detection of pulmonary tuberculosis in Rwanda.** *BMC Infectious Diseases*. 2016;16(1):660. doi: 10.1186/s12879-016-2009-x.
27. \*Simon GG. **Impacts of neglected tropical disease on incidence and progression of HIV/AIDS, tuberculosis, and malaria: scientific links.** *International Journal of Infectious Diseases*. 2016;42:54–7. doi: 10.1016/j.ijid.2015.11.006.
28. \*Tadesse Y, Gebre N, Daba S, Gashu Z, Habte D, Hiruy N, et al. **Uptake of isoniazid preventive therapy among under-five children: TB contact investigation as an entry point.** *PLoS One*. 2016;11(5):e0155525. doi: 10.1371/journal.pone.0155525.
29. Telisinghe L, Charalambous S, Topp SM, Herce ME, Hoffmann CJ, Barron P, et al. **HIV and tuberculosis in prisons in sub-Saharan Africa.** *The Lancet*. 2016;388:17–23. doi: 10.1016/S0140-6736(16)30578-5.
30. \*Umubyeyi AN, Bonsu F, Chimzizi R, Jemal S, Melese M, Ruttoh E, et al. **The role of technical assistance in expanding access to Xpert MTB/RIF: experience in sub-Saharan Africa.** *Public Health Action*. 2016;6(1):32–4. doi: http://dx.doi.org/10.5588/pha.15.0069.
31. van den Hof S, Collins D, Hafidz F, Beyene D, Tursynbayeva A, Tiemersma A. **The socioeconomic impact of multidrug resistant tuberculosis on patients: results from Ethiopia, Indonesia and Kazakhstan.** *BMC Infectious Diseases*. 2016;16(1):470. doi: 10.1186/s12879-016-1802-x.
32. van Hoorn R, Jaramillo E, Collins D, Gebhard A, van den Hof S. **The effects of psycho-emotional and socio-economic support for tuberculosis patients on treatment adherence and treatment outcomes: a systematic review and meta-analysis.** *PLoS One*. 2016;11(4):e0154095. doi: http://doi.org/10.1371/journal.pone.0154095.

## 2015

33. Jerene D, Melese M, Kassie Y, Alem G, Daba SH, Hiruye N, et al. **The yield of a tuberculosis household contact investigation in two regions of Ethiopia.** *International Journal of TB and Lung Disease*. 2015;19(8):898–903. http://dx.doi.org/10.5588/ijtld.14.0978.
34. \*Lukoye D, Ssengooba W, Musisi K, Kasule GW, Cobelens FG, Joloba M, et al. **Variation and risk factors of drug resistant tuberculosis in sub-Saharan Africa: a systematic review and meta-analysis.** *BMC Public Health*. 2015;15(1):291. doi: 10.1186/s12889-015-1614-8.
35. Lunte K, Cordier-Lassalle T, Keravec J. **Reducing the price of treatment for multidrug-resistant tuberculosis through the Global Drug Facility.** *Bulletin of the WHO*. 2015;93:279–82. doi: http://dx.doi.org/10.2471/BLT.14.145920.
36. Malhotra S, Ursu I, Ghoneim R, Paredes Jodrey P, Brown MS, Barr-DiChiara M. **From availability to uptake: planning for the introduction of new, child-friendly anti-tuberculosis formulations.** *International Journal of Tuberculosis and Lung Disease*. 2015;19(12):Suppl 1:32–S38. doi: http://dx.doi.org/10.5588/ijtld.15.0482.
37. \*Mekonnen, F. **Multidrug resistant tuberculosis: prevalence and risk factors in districts of Metema and West Armachiho, Northwest Ethiopia.** *BMC Infectious Diseases*. 2015;15:461. doi: 10.1186/s12879-015-1202-7.
38. \*Nabukenya-Mudiope MG, Kawuma HJ, Brouwer M, Mudiope P, Vassall A. **Tuberculosis retreatment “others” in comparison with classical retreatment cases: a retrospective cohort review.** *BMC Public Health*. 2015;15:840. doi: 10.1186/s12889-015-2195-2.
39. \*Nyaruhirira AU, Toussaint M, Nemser B, Vandebriel G, Gasana M, Ben Amor Y. **Performance of LED fluorescence microscopy for the detection of tuberculosis in Rwanda using Zeiss Primo Star.** *Pan African Medical Journal*. 2015;21:198. doi: 10.11604/pamj.2015.21.198.5776.
40. \*Qader G, Hamim A, Sayedi M, Rashidi M, Manzoor L, Seddiq MK, et al. **Addressing tuberculosis control in fragile states: urban DOTS experience in Kabul, Afghanistan, 2009–2015.** *PLoS One*. 2017;12(5):e0178053.

41. Titiyos A, Jerene D, Enqueselasia F. **The yield of screening symptomatic contacts of multidrug-resistant tuberculosis cases at a tertiary hospital in Addis Ababa, Ethiopia.** *BMC Research Notes*. 2015;8:501. doi: 10.1186/s13104-015-1442-z.
42. Wobudeya E, Lukoye D, Lubega IR, Mugabe F, Sekadde M, Musoke P. **Epidemiology of tuberculosis in children in Kampala district, Uganda, 2009–2010: a retrospective cross-sectional study.** *BMC Public Health*. 2015;15:967. doi: 10.1186/s12889-015-2312-2.

## 2014

43. Abouyannis M, Dacombe R, Dambe I, Mpunga J, Faragher B, Gausi F et al. **Drug resistance of *Mycobacterium tuberculosis* in Malawi: a cross-sectional survey.** *Bulletin of the WHO*. 2014;92:798–806. doi: <http://dx.doi.org/10.2471/BLT.13.126532>.
44. Gebregergs GB, Alemneh M, Koye DN, Kassie Y, Assefa M, Ayalew W, et al. **Poor symptomatic tuberculosis screening practices in a quarter of health centers in Amhara Region, Ethiopia.** *Public Health Action*. 2014;4 Suppl 3. doi: 10.5588/pha.14.0053.
45. Olakunle, OS, Oladimeji O, Olalekan AW, Olugbenga-Bello A, Akinleye C, Oluwatoyin OA. **Knowledge of tuberculosis management using directly observed treatment short course therapy among final year medical students in South Western Nigeria.** *Pan African Medical Journal*. 2014;18:32. doi: 10.11604/pamj.2014.18.32.3553.
46. \*Rutta E, Delmotte E, Mwakisu S, Konduri N, Kakanda K, Valimba R. **Understanding private retail drug outlet dispenser knowledge and practices in tuberculosis care in Tanzania.** *International Journal of Tuberculosis and Lung Disease*. 2014;18(9):1108–13. doi: <http://dx.doi.org/10.5588/ijtld.14.0020>.
47. Westerlund E, Jerene D, Mulissa Z, Hallström I, Lindtjörn B. **Pre-ART retention in care and prevalence of tuberculosis among HIV-infected children at a district hospital in southern Ethiopia.** *BMC Pediatrics*. 2014;14:250. doi: <http://www.biomedcentral.com/1471-2431/14/250>.

## 2013

48. Gemal A, Keravec J, Menezes A, Trajman A. **Can Brazil play a more important role in global tuberculosis drug production? An assessment of current capacity and challenges.** *BMC Public Health*. 2013;13:279. doi: <http://www.biomedcentral.com/1471-2458/13/279>.
49. \*\*Harries AD, Zachariah R, Chimzizi R, Salaniponi FM, Lawn SD. **Tuberculosis.** In: Mabey D, Gill G, Parry E, Weber MW, Whitty CJM (eds.) *Principles of medicine in Africa*. 4th ed. Cambridge: Cambridge University Press. 2013. p. 232–53. [http://www.cambridge.org/us/knowledge/isbn/item6459633/?site\\_locale=en\\_US](http://www.cambridge.org/us/knowledge/isbn/item6459633/?site_locale=en_US).
50. Hirpa S, Medhin G, Girma B, Melese M, Mekonen A, Suarez P, et al. **Determinants of multidrug-resistant tuberculosis in patients who underwent first-line treatment in Addis Ababa.** *BMC Public Health*. 2013;13(1):782. doi: <http://www.biomedcentral.com/1471-2458/13/782>.
51. Kibret KT, Alemayehu WY, Belaineh GB, Muluken MA. **Determinant factors associated with occurrence of tuberculosis among adult people living with HIV after antiretroviral treatment initiation in Addis Ababa Ethiopia: a case control study.** *PLoS One*. 2013;8(5):e64488. doi: 10.1371/journal.pone.0064488.
52. Mauch V, Bonsu F, Gyapong M, Awini E, Suarez P, Marcelino B, et al. **Free tuberculosis diagnosis and treatment are not enough: Patient cost evidence from three continents.** *International Journal of Tuberculosis and Lung Disease*. 2013;17(3):381–7. doi: <http://dx.doi.org/10.5588/ijtld.12.0368>.
53. \*\*Mauch V, Melgen R, Marcelino B, Acosta I, Klinkenberg E, Suarez P. **Tuberculosis patients in the Dominican Republic face severe direct and indirect costs and need social protection.** *Revista Panamericana de Salud Pública*. 2013;33:332–9.
54. Mitnick CD, Keravec J. **Planning for the invisible: projecting resources needed to identify and treat all patients with MDR-TB.** *International Journal of Tuberculosis and Lung Disease*. 2013;17(4):427-8. doi: 10.5588/ijtld.13.0110.

55. Sileshi B, Deyessa N, Girma B, Melese M, Suarez P. **Predictors of mortality among TB-HIV co-infected patients being treated for tuberculosis in northwest Ethiopia: a retrospective cohort study.** *BMC Infectious Diseases*. 2013;13:297. doi: 10.1186/1471-2334-13-297.
56. Vianzon R, Garfin AMC, Lagos A, Belen R. **The tuberculosis profile of the Philippines, 2003-2011: advancing DOTS and beyond.** *Western Pacific Surveillance and Response Journal*. 2013;4(2):11-16. doi: 10.5365/wpsar.2012.3.4.022.

## 2012

57. \*Daniel G, Tegegnetwork H, Demissie T, Reithinger R. **Pilot assessment of supply chains for pharmaceuticals and medical commodities for malaria, tuberculosis and HIV infection in Ethiopia.** *Transactions of the Royal Society for Tropical Medicine and Hygiene*. 2012;106(1):60-2. doi: 10.1016/j.trstmh.2011.09.008.
58. Gafirita J, Umubyeyi AN, Asimwe BB. **A first insight into the genotypic diversity of *Mycobacterium tuberculosis* from Rwanda.** *BMC Clinical Pathology*. 2012;12:20. doi: 10.1186/1472-6890-12-20.
59. \*Sagwa E, Mantel-Teeuwisse AK, Ruswa N, Musasa JP, Pal S, Dhliwayo P, et al. **The burden of adverse events during treatment of drug-resistant tuberculosis in Namibia.** *Southern Medical Review*. 2012;5(1):6-13.
60. Saito S, Howard AA, Reid MJ, Elul B, Scardigli A, Verkuijl S, et al. **TB diagnostic capacity in sub-Saharan African HIV care settings.** *Journal of Acquired Immune Deficiency Syndromes*. 2012;61(2):216-20. doi: 10.1097/QAI.0b013e3182638ec7.
61. \*\*Tadeg H, Berhane Y. **Substandard and counterfeit antimicrobials: recent trends and implications to key public health interventions in developing countries.** *East African Journal of Public Health*. 2012;9(2):85-9.

## 2011

62. Falzon D, Jaramillo E, Schünemann HJ, Arentz M, Bauer M, Bayona J, et al. **WHO guidelines for the programmatic management of drug-resistant tuberculosis: 2011 update.** *European Respiratory Journal*. 2011;38(3):516-28. doi: 10.1183/09031936.00073611.
63. Harries AD, Zachariah R, Chimzizi R, Salaniponi F, Gausi F, Kanyerere H, Schouten EJ, et al. **Operational research in Malawi: making a difference with cotrimoxazole preventive therapy in patients with TB and HIV.** *BMC Public Health*. 2011;11(593). doi: 10.1186/1471-2458-11-593.
64. Wells WA, Konduri N, Chen C, Lee D, Ignatius HR, Gardiner E, et al. **Implications of the current TB treatment landscape for future regimen change.** *International Journal of Tuberculosis and Lung Disease*. 2011;15(6):746-53. doi: 10.5588/ijtld.10.0094.

## 2010

65. Wells WA, Konduri N, Lee D, Ignatius HR, Gardiner E, et al. **TB regimen change in the high burden countries.** *International Journal of Tuberculosis and Lung Disease*. 2010;14(12):1538-47. doi: http://www.ingentaconnect.com/content/iuatld/ijtld/2010/00000014/00000012/art00010.

## 2009

66. Ngadaya ES, Mfinanga GS, Wandwalo ER, Morkve O. **Delay in tuberculosis case detection in Pwani Region, Tanzania: a cross-sectional study.** *BMC Health Services Research*. 2009;9:196. doi: 10.1186/1472-6963-9-196.
67. Ngadaya ES, Mfinanga GS, Wandwalo ER, Morkve O. **Pulmonary tuberculosis among women with cough attending clinics for family planning and maternal and child health in Dar Es Salaam, Tanzania.** *BMC Public Health*. 2009;9:278. doi: 10.1186/1471-2458-9-278.

## 2008

68. Ahmadzai H, Rashidi M, Suarez P, Ameli O, Hartman AF. **Scaling up TB DOTS in a fragile state: post-conflict Afghanistan.** *International Journal of Tuberculosis and Lung Diseases*. 2008;12(2):180-5.



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